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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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NIXON & VANDERHYE P.C./G.E.
1100 N. GLEBE RD.
SUITE 800
ARLINGTON, VA 22201

EXAMINER

KERNS, KEVIN P

ART UNIT PAPER NUMBER

1725

DATE MAILED: 09/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,220

Applicant(s)

BEDDARD ET AL.

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☒ Claim(s) 1-15 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/2/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9, drawn to cores, classified in class 164, subclass 369.
 - II. Claims 10-15, drawn to a method of controlling wall thickness during casting, classified in class 164, subclass 137.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the cores of Invention I can be used in a process that is materially different from that of Invention II. For example, the cores of Invention I can be used as mold inserts in processes of casting other products with intricate internal cavities such as wheels and engine components.

3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Michael Keenan on September 21, 2004, a provisional election was made without traverse to prosecute Invention I, claims 1-9.

Affirmation of this election must be made by applicant in replying to this Office action.

Claims 10-15 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Note: In this instance, the abstract recites the legal term "comprising" in the 2nd line.

7. The abstract of the disclosure is objected to because "9" should be deleted at the beginning of the 1st line. Correction is required. See MPEP § 608.01(b).

8. The disclosure is objected to because of the following informalities: in paragraph [0010], 2nd line, "n" should be changed to "in" after "cast". In paragraph [0017], 5th line, "50" should be changed to "54" after "slot". Appropriate correction is required.

Claim Objections

9. Claim 9 is objected to because of the following informalities: it is believed that the applicants possibly intended for this claim to be dependent on claim 7 rather than claim 6, as the claim limitations of claims 6 and 9 are quite similar (but not exactly the same). Appropriate correction is required (if necessary).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 5, 6, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Obrochta et al. (US 4,283,835).

Obrochta et al. disclose a cambered core positioning system for use in casting of gas turbine airfoils, in which the cambered ceramic core 20 includes a solid upper body portion; a pair of substantially planar legs extending downwardly from the upper body portion, with the upper body portion being curved to form opposite concave 26' and convex 26 surfaces, and the pair of legs being separated by an elongated slot 37; and a plurality (arranged in pairs) of laterally aligned pegs (fixed pins 28,30,32 cooperating with respective spring-loaded movable peripheral pins 28',30',32', as well as cooperating movable centerline pins 34,34',36,36') projecting axially from opposite sides of the convex surface 26 of the upper body portion above and closer to the elongated slot 37, but spaced from an upper edge of the upper body portion (abstract; column 2, lines 55-68; column 3, lines 1-26; column 4, line 9 through column 7, line 54; and Figures 1-3).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 3, 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obrochta et al. (US 4,283,835) in view of either Willett et al. (EP 1 022 434 A2) or Lee (US 6,234,753).

Obrochta et al. disclose the elements of claims 1 and 2 above. Obrochta et al. do not specifically disclose pegs of elliptical cross section.

However, Willett et al. disclose a gas turbine blade cooling configuration for gas turbine buckets, in which the cooling configuration is provided by one or more elliptically-shaped radial cooling passages 54 formed by utilizing elliptically-shaped quartz rods (pegs) within the ceramic core, such that the use of elliptically-shaped quartz rods (pegs) provides the advantages of creating coolant cross flow between adjacent radial passages while minimizing stress concentration in the bucket (abstract; paragraphs [0005]-[0010]; and Figures 1-3).

In addition, Lee discloses a turbine airfoil with internal cooling, in which the internal cooling is provided by a plurality of core tie holes (42,142) that are preferably elliptical in cross-section, such that the core tie holes (42,142) would necessarily be created by using core supports in the form of elliptical pegs/rods, with the elliptical core tie holes providing the advantages of controlling coolant cross flow between adjacent

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radial passages (via minimizing pressure differential) while minimizing stress in the turbine airfoil (abstract; column 2, lines 10-17 and 40-67; column 3, line 1 through column 5, line 53; and Figures 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the pegs/pins of cambered ceramic core disclosed by Obrochta et al., by using pegs/pins with elliptical shapes, as taught/suggested individually by Willett et al. and Lee, in order to create coolant cross flow between adjacent radial passages while minimizing stress concentration in the bucket (Willett et al.; paragraphs [0005] and [0010]), and in order to control coolant cross flow between adjacent radial passages (via minimizing pressure differential) while minimizing stress in the turbine airfoil (Lee; column 3, lines 29-31 and 62-67; column 4, lines 1-5 and 25-67; and column 5, lines 1-53).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Frey and Tiemann references are also cited in PTO-892.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 9/23/04*
Examiner
Art Unit 1725

KPK
kpk
September 23, 2004